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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|--------------------------|---------------------|------------------|
| 10/641,350 | 08/14/2003 | Christopher Kempson Shaw | 194-26936-US | 9812 |
| 24923 | 7590 | 09/26/2006 | EXAMINER | |
| PAUL S MADAN MADAN, MOSSMAN & SRIRAM, PC 2603 AUGUSTA, SUITE 700 HOUSTON, TX 77057-1130 | | | | BOMAR, THOMAS S |
| | | ART UNIT | | PAPER NUMBER |
| | | 3672 | | |

DATE MAILED: 09/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/641,350 | SHAW ET AL. | |
| | Examiner | Art Unit | |
| | Shane Bomar | 3672 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 30 June 2006.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-42 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-42 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Claim Objections

1. Claim 39 is objected to because of the following informalities: the recitation of “the formation stored” most likely should be rewritten as --the formation fluid--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 2, 5-8, 12, 16, 19, 21-23, 27, and 36-42 are rejected under 35 U.S.C. 102(b) as being anticipated by US patent 4,589,434 to Kelley.

Regarding claims 1, 5, 8 and 36, Kelley discloses a system for injecting one or more additives into production fluid produced by at least one subsea well, the system comprising: a) a surface chemical supply/storage unit for supplying at least one chemical to a selected subsea location; b) at least one chemical supply line for carrying the at least one chemical from the surface to the selected subsea location (see col. 8, lines 7-28); and c) a subsea chemical injection unit 11 at the selected subsea location receiving the at least one chemical from the surface chemical supply unit and selectively injecting the at least one chemical into the production fluid in line 34 using a subsea pump 32, wherein it is noted that when the pump 32 injects fluid into line 34, it is also injecting the chemical that was introduced into the unit 11 from the surface (see Fig. 2 and col. 5, line 60 through col. 6, line 66).

Regarding claims 2 and 38, a chemical hydrate inhibitor is injected as needed by an inherent controller in response to hydrate formation (see col. 8, lines 7-18).

Regarding claim 6, it is stated in column 6, lines 19-23, that there can be more than one unit 11, therefore there would be more than one chemical supply line to each unit.

Regarding claim 7, the lines of claim 6 carry hydrate inhibitors and corrosion inhibitors (see col. 8, lines 25-28).

Regarding claim 12, the interior of unit 11 will act as a manifold because hydrate inhibitors and corrosion inhibitors injected into the unit will mix together in the standing fluid before being injected into the line 34 by the pump 32 (see Fig. 2).

Regarding claim 16, the chemical supply line is outside of riser 21 or 23 (see Fig. 2).

Regarding claims 19, 21-23, 27, and 40, there is a plurality of wells with a unit at each one (see col. 5, lines 27-31); the unit ultimately injects into the pipeline 18 (see Fig. 2); there is a heating device for heating the fluid (see col. 9, lines 17-20); and the supply of chemical is controlled (see col. 8, lines 24-25).

Regarding claims 37 and 39, a level sensor measures a parameter of interest, i.e., the physical level of the fluid (see col. 7, line 59-col. 8, line 6).

Regarding claims 41 and 42, the unit 11 technically stores the injected chemical that is supplied from the surface until the pump 32 injects the fluid and chemical into the line 34, and when the chemical is introduced as needed, the signal comes remotely from the surface to the unit 11 through the chemical supply line (see col. 8, lines 19-28).

Claim Rejections - 35 USC § 103

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 3, 4, 13, 17, 18, 24, 30, 31, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley in view of US patent 6,292,756 to Lievois et al.

Regarding claims 3, 4, 13, 30, 31, and 35, Kelley teaches the system of claim 2 that includes injecting hydrate and corrosion inhibiting chemicals into production fluid, as well as the majority of the method of claim 30 for assuring the flow of fluid produced by at least one subsea well by injecting chemicals into said fluid, as shown above. However, it is not explicitly taught that a parameter of interest, such as hydrate formation, is actually measured so that the chemicals can be added in response to said measurement.

Lievois et al also teach a system and method for injecting hydrate and corrosion inhibiting chemicals into production fluid (see the Abstract). It is further taught that the water content of the production fluid must be measured to determine if a hydrate/corrosion forming condition exists, and to control the amount of chemical injected into the fluid based on the measurements (see col. 4, lines 5-29 and 50-67). It would have been obvious to one of ordinary skill in the art, having the teachings of Kelley and Lievois et al before him at the time the

invention was made, to modify the system and method taught by Kelley to include the hydrate/corrosion measurement and control system/method of Lievois et al, in order to obtain the proper concentration of chemical additives. One would have been motivated to make such a combination because the references address the narrow problem of reducing hydrate/corrosion formation in production fluid lines, therefore a person seeking to solve that exact problem would consult the references and apply their teachings together.

Regarding claims 17 and 18, the combination applied to claims 3 and 4 above analogously teaches that a plurality of the sensors can be distributed along the fluid path, wherein it is also obvious to place sensors wherever needed and since the Applicant is claiming various locations for sensors, there appears to be no criticality to the location of the sensor (see Fig. 4, wherein 96, 98, and 400 are sensors; and col. 12, lines 18-21 of Lievois et al).

Regarding claim 24, the combination applied to claim 3 above analogously teaches that the controller remotely signals the chemical injection controller (see Fig. 1 of Lievois et al).

6. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley in view of US patent 6,869,251 to Zou et al.

Kelley teaches the system of claim 1 that includes a surface chemical supply unit for supplying chemicals through a line to the chemical injection unit, however it is not explicitly taught what type of surface facility the supply unit resides on.

Zou et al teach a satellite platform 11 similar to the satellite platform 21 of Kelley. It is further taught that the platform 11 is a buoy and there are chemical supply units 43 that can supply different chemicals to subsea locations (see Figs. 1-4 and col. 5, lines 1-15). It would have been obvious to one of ordinary skill in the art, having the teachings of Kelley and Zou et al

before him at the time the invention was made, to modify the system taught by Kelley to include the satellite buoy of Zou et al. One would have been motivated to make such a combination since, as is notoriously known in the art, the distance between platforms 21 and 23 of Kelley can be extremely large, therefore a need arises for supplying chemicals and other surfaces to the subsea pipeline operations at points along the pipeline. Zou et al's buoy fills such need and avoids having to transport chemicals over a large distance (see col. 5, lines 5-9).

7. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley in view of US patent 6,575,248 to Zhang et al.

Kelley teaches the system of claim 1 from above that includes a chemical injection unit. However, it is not expressly taught that a subsea power unit provides power to the injection unit. Zhang et al teach a subsea manifold 700 that houses subsea chemical injection unit that is powered by a subsea power unit, such as fuel cell 730 that can recharge batteries, wherein the fuel cell is replenished or recharged ultimately from the surface (see col. 11, line 62-col. 12, line 3; col. 14, lines 22-29; and col. 12, lines 34-49). It would have been obvious to one of ordinary skill in the art, having the teachings of Kelley and Zhang et al before him at the time the invention was made, to modify the system taught by Kelley to include the subsea power unit of Zhang et al, in order to obtain a system that can operate efficiently away from traditional power sources. One would have been motivated to make such a combination because the references address the narrow problem of injecting chemicals into subsea production lines, therefore a person seeking to solve that exact problem would consult the references and apply their teachings together.

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8. Claims 20, 28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley in view of US patent 3,695,047 to Pogonowski et al.

Kelley teaches the system of claim 1 that teaches the delivery of production fluid through a line but does not explicitly teach that a subsea processing unit receives the fluid for at least partial refinement thereof.

Pogonowski et al teaches that it is known to at least partially refine produced oil while still underwater (see col. 1, lines 18-26). It would have been obvious to one of ordinary skill in the art, having the teachings of Kelley and Pogonowski et al before him at the time the invention was made, to modify the system taught by Kelley to include the subsea processing capability of Pogonowski et al. One would have been motivated to make such a combination since Pogonowski et al have shown the capability of at least partial subsea refinement to be well known in the art by separating water from the oil before transport to the surface, wherein it would be obvious that larger volumes of the desired oil product can be received at the surface for more immediate processing while the unwanted water can be left underwater or shipped to separate facilities.

9. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley in view of US patent 6,281,489 to Tubel et al.

Kelley teaches the system of claim 1 that includes a chemical supply line for the chemical injection unit, although it is not expressly taught that there is a plurality of sensors to provide characteristics of at least one chemical carried in the line.

Tubel et al teach a system for supplying chemicals through a line to treat production fluids, wherein there is a plurality of sensors 700-716 to provide characteristics of at least one

chemical carried in the line (see Fig. 13 and col. 18, lines 4-21). It would have been obvious to one of ordinary skill in the art, having the teachings of Kelley and Tubel et al before him at the time the invention was made, to modify the chemical supply line taught by Kelley to include the sensors of Tubel et al, in order to obtain real time parameters of the chemicals introduced. One would have been motivated to make such a combination because the references address the narrow problem of injecting chemicals into production fluids, therefore a person seeking to solve that exact problem would consult the references and apply their teachings together.

10. Claims 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley in view of Lievois et al as applied to claim 30 above, and further in view of Zou et al.

The combination applied to claim 30 lacks the same limitations from claims 32-34 as those from claims 9-11 above. Therefore, Zou et al analogously provide a teaching for the missing limitations with the same reasons for combining the references.

Allowable Subject Matter

11. Claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

12. Applicant's arguments, see pages 11-14, filed June 30, 2006, with respect to the rejection(s) of claim(s) 1, 30, and 36 under 35 USC 103(a) have been fully considered and are

persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Kelley.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gallagher et al teach monitoring and controlling asphaltene. Perkins teaches a system of particular interest.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shane Bomar whose telephone number is 571-272-7026. The examiner can normally be reached on Monday - Thursday from 6:30am to 4:00pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on 571-272-6999. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David J. Bagnell
Supervisory Patent Examiner
Art Unit 3672

tsb
September 18, 2006


Jennifer H. Gay
Primary Examiner